

The Present State and Prospects of Slovenian Private Forest Owners' Cooperation within Machinery Rings

Špela Pezdevšek Malovrh, Petra Grošelj, Lidija Zadnik Stirn, Janez Krč

Abstract – Nacrtak

The study analyzes the challenges and prospects of private forest owners' cooperation based on the use of machinery in Slovenia applying the strengths, weaknesses, opportunities and threats approach (SWOT analysis) in combination with the analytic hierarchy process (AHP). The data from questionnaires with forest owners and presidents of machinery rings were used to develop and to analyze the strategies for forest owners' cooperation. The results reveal that the members of machinery rings are only partly satisfied with the operation of the existing rings and that the activities of rings meet the members' interests related to forest management. Thus, machinery rings are recognized as a suitable form of forest owners' cooperation. The presidents of machinery rings perceive the integration of farmers and private forest owners, as well as knowing the level of mechanization of members as major strengths of machinery rings. Further, strengthening the operation of machinery rings in the field of forestry is recognized as an important opportunity. The shortage of means for operation is identified as a weakness for machinery rings, and the lack of subsidies for investments in equipment is identified as a critical threat. However, the rank of importance of the SWOT groups leads to defensive approach in the strategic planning where machinery rings have to minimize weaknesses in order to avoid threats. These results provide important insights in the future development of forest owners' cooperation based on common use of machinery.

Keywords: cooperation based on the use of machinery, machinery rings, private forests, survey, A'WOT method, strategic planning

1. Introduction – Uvod

Renewable natural resources, wood being among the most important ones, are limited and their availability depends on terrain and climate circumstances/conditions, on the technological development and its application in forest management. Slovenia maintains close-to-nature forestry, which incorporates two main principles: sustainability of all forest functions and imitation of natural processes (Sustainable Forest Management). This principle demands for a significant incorporation of the social component into forest management activities.

In Slovenia small-scale private forests are dominant as 73% of forests are privately owned (Report of the Slovenian Forest Service 2010). The property structure of Slovenian privately-owned forests reveals that 58.4% of owners have a forest property smaller

than 1 ha and that the average property size of private forests is less than 3 ha (Pezdevšek Malovrh et al. 2010).

The development of small-scale private forestry and management activities are strongly connected to socio-economic structural changes of the population, which are related to an increasing number of owners and to the diminishing in size of forest properties as well as a decrease of rural population (Pezdevšek Malovrh 2006, Stampfer et al. 2001). These changes result in the absence or insufficient forest management, inefficient equipment and inadequate qualification for work, as well as in low profitability (Lahdensaari 2001).

The consequences of such management practices are reflected in the lack of exploitation of natural resources as only two thirds of the potential timber removal in Slovenian private forests is implemented

and according to forest management plans, less than half of silvicultural work is carried out (Report of the Slovenian Forest Service 2010).

According to Stampfer et al. (2001) insufficient use of machinery and improvement of harvesting system were recognized as significant management problems in small-scale forests in Austria. The situation in Slovenia is quite similar, and in some respects the private forest management reveals additional and extended problems. Slovenia is faced with the problem of overcapacity of mechanization in agriculture and forestry. Based on the number of tractors per capita, Slovenia is in the leading position worldwide (followed by Ireland in the second place and Austria in the third place). Consequently, compared to Austria, Slovenia also deals with management problems, where the modernization of equipment, an adequate procurement of technical means (machinery), a rational investment and expansion of fully-mechanized machines are of key importance for management improvement.

Modern forestry mechanization offers the benefits such as multiplying operator productivity (Spinelli and Magagnotti 2010) and enhancing work safety (Bell 2002), but on the other hand requires a significant capital investment, which often exceeds the capacity of small-scale private forest owners (Spinelli and Magagnotti 2011). So, on the one hand, technological progress depends upon the conditions and trends in individual households and, on the other hand, on financial incentives (Robek et al. 2005).

In order to ensure the exploitation of machinery capacity, cooperation between owners has to be developed based on the use of machinery. The use of modern technology in small-scale forestry is only possible by cost rationalization in mechanization. Therefore, it is necessary for private forest owners to cooperate based on the use of machinery in order to increase their competitiveness.

In the first phase, the aim of this paper is to establish the present state of cooperation, using a survey, based on the use of machinery in Slovenia, and in the second phase to find a hinge between the existing situation and future strategies of forest owner cooperation regarding the machinery in Slovenia by the use of A'WOT method.

2. Cooperation of forest owners regarding the use of machinery in Slovenia – *Suradnja šumovlasnika u upotrebi mehanizacije u Sloveniji*

The existing forest owners cooperation based on the use of machinery in Slovenia, such as machinery

rings and machinery communities, is essential to give small-scale private forest owners the chance to overcome the cost inefficient forest management and use the advantages of modern technologies.

»Machinery« rings are an organized form of »neighbor assistance« and voluntary association of farmers and private forest owners in the region operating on a group basis. Cooperation based on the use of machinery is extended to the whole area of a machinery ring. Its members offer free capacity of the machinery or labor to other members through their work and use of their own machinery or lend it without an operator, but the member has to pay a price covering the machine costs. It is the responsibility of machinery rings to inform members and to provide them services. In the legal, tax and financial terms, the services are carried out directly between the client and the contractor.

The first machinery rings were established in Slovenia in 1994. So far 45 machinery rings have been established. Nowadays, they practically cover the whole country. At the end of 2010 they had 6,018 members. The Societies Act (2011) forms the legal basis for machinery rings. Machinery rings are mainly engaged in agriculture; only three of them are engaged in forestry. In the previous year (2010), the members carried out on average about 140,000 hours of services, which represents approximately 23 hours of services per member (Dolenšek 2008).

The economic benefits of participation in the machinery rings are higher utilization of machines and a consequent reduction of costs, higher productivity and quality of work, as well as the possibility to generate additional income by working in other members' farms or forests. Furthermore, the social benefits of participation in machinery rings are connected to work safety and consequently to reducing the number of accidents, to participation and offering help in labor during the holidays and peak seasons, to improved social relationship between neighbors, all resulting in improved quality of life on the farm.

The main feature of machinery communities is a combined purchase of machinery and equipment. The investment is distributed among several farms, which are community members. They mostly buy machinery or equipment that is used only a few days per year or has a high capacity and high costs (Plej 2001).

Most machinery communities are formed based on a verbal agreement between neighbors that are farmers or/and forest owners to purchase machinery or equipment and each member pays a share proportional to the size of his farm or forest. On the other hand they can also sign a contract for establishing a

machinery community where they define the value of the machinery, the share of each member, the order for machinery use, the possibilities for switching the order, the storage of machinery, its maintenance and maintenance costs (Zgonjanin 1987).

Community machinery is used by members in a predetermined order, but for the most complex pieces of machinery, members can agree that only the most qualified member of the community can operate the machine. In this particular case, the members agree on the manner of compensation costs for the work done, mostly with money or their own labor (Ekart 1978, Oto 2011).

A joint purchase and use of machinery have many advantages compared to individual purchase and use. It provides the opportunity to buy modern machines and reduces the possibility of buying obsolete machinery, the maintenance of which tends to be expensive (Šumi 1977).

3. Methods used – Metode rada

3.1 Surveying private forest owners and data analysis – Anketiranje privatnih šumovlasnika i analiza podataka

The population sample consisted of private forest owners that were members of machinery rings ($n = 1471$). The members were stratified into five property size classes – strata (less than 1 ha; 1 – 5 ha; 5 – 10 ha; 10 – 30 ha; more than 30 ha). Sampling was systematically conducted within each of these five strata. In total 172 members of machinery rings were selected (Table 1). Prior to the study, the questionnaire was tested on 7 forest owners. In the year 2009 face-to-face interviews were done with selected members. The overall response rate was 45.9% ($n = 79$). The analysis of the frequencies of non-response showed no significant difference between property size classes ($\chi^2 = 4.000$; $p = 0.406$).

In the survey, respondents were asked which interests they fulfill as members of machinery rings, whether they are satisfied with machinery rings, how

the rings fulfill their expectations and if machinery rings represent a suitable cooperation form in relation to forest owners' needs in forest management. They assessed the satisfaction and suitability on a five point Likert scale, where one means very unsatisfied/unsuitable and five very satisfied/suitable. The statistical analyses performed in this study were based on frequency distribution across ordinal variables. Firstly, descriptive statistics and frequency histograms for all variables were produced and then the mean values considered.

3.2 A'WOT method – Metoda A'WOT

SWOT analysis is a strategic management tool that helps to identify internal strengths and weaknesses and external opportunities and threats for any organization, project or individual (Dyson 2004) in order to attain a systematic approach and support the decision situation (Pesonen et al. 2001). The most important internal and external factors for the organizational future are referred to as strategic factors and they are summarized within the SWOT analysis. SWOT analysis can provide a good basis for successful strategy formulation (Kurttila et al. 2000, Rauch 2007).

However, one of the main limitations of SWOT analysis is that the importance of each factor in decision making cannot be measured quantitatively and therefore, it becomes difficult to assess the potential of a factor to influence strategic decision (Dwivedi et al. 2009). Kurttila et al. (2000) examined a new hybrid method (A'WOT) where they integrated the Analytic Hierarchy Process (AHP) within SWOT analysis, for improving the usability of SWOT analysis. AHP (Saaty 1980) enables to assign a relative priority to each factor through pairwise comparison, on a scale where 1 implies equal, 3 moderate, 5 strong, 7 very strong and 9 extreme. From the pairwise comparisons the relative priority weight of each factor within each SWOT groups is computed using the eigenvector method as explained below.

According to Saaty (1980), information derived from the pairwise comparisons is represented in a

Table 1 Distribution of population and sample according to strata
Tablica 1. Raspodjela populacije i uzorka šumovlasnika po razredima

Number of cases - Broj slučajeva	Strata, ha - Grupe, ha					Total Ukupno
	Less than 1 Manje od 1	1 to 5 1 do 5	5 to 10 5 do 10	10 to 30 10 do 30	More than 30 Više od 30	
Population distribution - Raspodjela populacije	469	529	218	191	64	1471
Sample distribution - Raspodjela uzorka	19	51	42	36	24	172
Response distribution - Raspodjela odgovora	1	18	18	26	16	79

comparison matrix A (1), where the comparison between i^{th} and j^{th} element enters into the matrix as an element a_{ij} , and inverse comparisons as $a_{ij} = 1/a_{ji}$

$$A = \begin{bmatrix} 1 & a_{12} & \dots & a_{1n} \\ \frac{1}{a_{12}} & 1 & \dots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{1}{a_{1n}} & \frac{1}{a_{2n}} & \dots & 1 \end{bmatrix} \quad (1)$$

For deriving priorities, the eigenvector method is used, where the priority vector $w = (w_1, \dots, w_n)$ is obtained by solving the equation $Aw = \lambda_{\max} w$,

Where:

λ_{\max} is the largest eigenvalue of the matrix A .

The comparison matrix A is consistent if its entries satisfy: $a_{ij} a_{jk} = a_{ik}$, for all $i, j, k = 1, \dots, n$.

Consistency ratio (2) measures the inconsistency among the pairwise comparisons:

$$CR = \frac{CI}{RI} \quad (2)$$

Where $CI = \frac{\lambda_{\max} - n}{n - 1}$ is the consistency index, n is the order of matrix A and RI is the average random consistency index. Regarding the consistency, the comparison matrix A is acceptably consistent if $CR < 0.1$, but in the opposite case ($CR > 0.1$), serious inconsistencies may exist and the AHP may not yield meaningful results, so decision makers should reconsider their judgments (Saaty 1980, Šporčič et al. 2010).

The final goal of a strategic planning process, of which A'WOT analysis is an early stage, is to develop and adopt a strategy (strategic objectives) resulting in a good fit between the internal and external factors and the goals of the forms of cooperation (Kangas et.al 2003). There are two possible approaches, an offensive approach and a defensive approach. The »offensive approach« represents two possible combinations to the strategic development – the first one being the use of strengths to take opportunities, and the second the taking of opportunities by overcoming the weaknesses. Furthermore, the »defensive approach« also represents two combinations – to avoid threats by using the strengths or minimizing the weaknesses (Marušič 2005).

3.2.1 Application of A'WOT method to private forest management – *Primjena metode A'WOT u upravljanju privatnim šumama*

In a first phase, the list of machinery rings in Slovenia was prepared working in different fields, from agriculture to forestry. To identify the factors in each SWOT group, the presidents of machinery rings that

work in the Slovenian forestry ($n = 3$) were interviewed. They were asked to express their opinion about the strengths, weaknesses, opportunities and threats of their activities in private forest management.

Based on the factors identified in each SWOT group, a questionnaire was prepared. This questionnaire contained pairwise comparisons between all factors in a particular SWOT group. Individual judgments were aggregated into a group judgment by the geometric mean (Lai et al. 2002, Saaty 2003, Grošelj and Zadnik Stirn 2011, Šporčič et al. 2011). These mean values form group comparison matrices and weights (w) were obtained for each SWOT factor using eigenvector method. The factor with the highest priority score was identified in each SWOT group. A separate questionnaire containing pairwise comparisons between the factors with highest priorities score in each SWOT group was developed. This was done to estimate the overall priorities of different SWOT groups.

As some individual comparison matrices were not acceptably consistent, the respondents were asked to reconsider their judgments so as to get acceptably consistent group comparison matrices derived from individual comparison matrices.

4. Results and discussion – *Rezultati i rasprava*

4.1 Results of questionnaires – *Rezultati upitnika*

The members of machinery rings are only partly satisfied with the operation of the rings (average value is 3.7). The members stated that they felt slight dissatisfaction due to the inactivity of machinery rings, lack of services offered, lack of cooperation among members, difficulties in issuing accounts and poor organization in machinery rings as machinery rings do not make the list of services offered by members or the list of machinery available to the members. The results supply evidence for a need of ongoing organizational changes in machinery rings., It is, therefore, necessary that the rings start being professional in their operation as only a well-organized cooperation system is able to organize and control the whole information and machinery needs.

Furthermore, in total 93.9% of private forest owners meet the interests related to forest management in machinery rings. They highlighted 12 key interests that they fulfill in machinery rings (Table 2) that are connected to wood skidding, easier and quicker completion of work, helping in harvesting, education, excursions and demonstrations, and joint

Table 2 Interests the members fulfill in machinery rings
Tablica 2. Interesi koje članovi ispunjavaju u udruženju za upotrebu šumske mehanizacije

Interest – Interesi	Share, % Udio, %
Help in wood skidding – Pomoć pri privlačenju drva	13.3
Easier and quicker completion of work – Lakše i brže obavljanje poslova	13.3
Help in harvesting – Pomoć pri sječi	12.0
Education – Obrazovanje	10.7
Excursions and demonstrations – Izleti i prikazi	9.3
Joint purchasing of equipment – Zajednička nabava opreme	9.3
Offering services with agricultural machinery to other members Ponuda usluga poljoprivredne mehanizacije drugim članovima	6.7
Getting information – Dobivanje informacija	6.7
Social help – Socijalna pomoć	4.0
Economic interest – Ekonomski interes	2.7
Excise duties – Trošarine	2.7
Timber sale – Prodaja drva	2.7

purchasing of equipment. Less often they fulfill the interests that are related to timber sale, excise duties, economical interest, social help and offering services with agriculture mechanization to other members.

Nevertheless, the members are unable to sufficiently meet the following interests in machinery rings: the production of wood chips, execution of silvicultural work, joint purchases of machinery, promotion of forest management intensification, forest

Table 3 SWOT analysis of machinery rings
Tablica 3. SWOT analiza udruženja za upotrebu mehanizacije

STRENGTHS – SNAGE

Integration of farmers and private forest owners
Povezanost poljoprivrednika i privatnih šumovlasnika
 Knowing the level of mechanization of members
Poznavanje razine mehanizacije kod članova
 Education of private forest owners
Obrazovanje privatnih šumovlasnika

OPPORTUNITIES – PRIJLIKE

Partial professionalization of work
Djelomična profesionalizacija rada
 Strengthening the operation of the machinery rings in the field of forestry
Jačanje operacija udruženja u šumarstvu

WEAKNESSES – SLABOSTI

Realization of personal interests
Postizanje osobnih interesa
 Not enough means for operation
Nedovoljno sredstava za operacije
 Lack of time of the machinery ring president
Nedostatak vremena predsjednika udruženja za upotrebu mehanizacije

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THREATS – PRIJETNJE

Competition among providers/members
Konkurencija među dobavljačima/članovima
 Subsidies for equipment investments
Poticaji za nabavu opreme
 Fostering the association of Slovenian public forestry service into other forms of cooperation – *Poticanje udruživanja u druge oblike suradnje koje dolazi od javnoga šumarskoga servisa Slovenije*

products marketing and winter maintenance of forest roads.

For most members, machinery rings are a suitable form of cooperation in relation to their needs in forest management (average value = 4.0). These findings relate to the fact that the cooperation based on the use of machinery will also be important in the future, especially having in mind the socio-economic changes from pure farms to mixed or supplement farms. Consequently, less and less private forest owners will have the time, the practical experiences of forest management and sufficient knowledge in forestry, and thus in future a greater share of private forest owners will hire services offered by machinery rings. Therefore, the future public institution cooperation should be promoted based on the use of machinery.

4.2 Results of A'WOT method – Rezultati metode A'WOT

SWOT analysis involved three presidents of machinery rings that deal exclusively with forestry in Slovenia. The results reflect the point of view of the presidents and are presented in Table 3.

The strength of machinery ring is shown in the association of farmers and private forest owners who cooperate in the utilization of machinery, which is not limited only to the closest neighbors (inter-neighbor assistance) but is available for use in the whole area of the machinery ring (several villages, municipality). Furthermore, the head of the machinery ring knows the mechanization of members, passes on the information about needs and available capacities,

and coordinates the collaboration of the clients and service providers. The strength is also that the members are trained and educated in the ring – for example forest machinery rings are active especially in the field of work safety in the forest, they attend machinery presentations, excursions, and courses.

As all forms of cooperation are organized as a society and are operating on voluntary basis, machinery rings also have to deal with weaknesses such as personal interests of the members, poor financial means for operation, which decreases on a yearly basis, and a lack of time of the people in charge. Machinery rings receive financial means mainly through members' fees, by co-financing by the Ministry of Agriculture, Forestry and Food, and by charging its services to non-members. Still, there is a lack of financial means to professionalize the position of the executive of the machinery ring (in Slovenia one executive has a part-time job, the rest work under contracts) (Dolenšek 2008). This implies that Governmental institutions (especially the Ministry of Agriculture, Forestry and Food) should become more active in promoting cooperation in joint purchases and use of machinery and in supporting efforts for professionalizing such forms. However, a financial system should be established that will in its initial phase help machinery rings to start with semi professionalization and find a way to stimulate the employees of public institutions (e.g. possibilities for additional education, involvement in forestry excursions) to spread information and to promote cooperation of common machinery use. Due to the operation expansion and an increase of members (between 2006 and 2009, membership grew from 330 to 460 with the area collectively owned by these members similarly growing from 4.715 ha to 6.713 ha in three forestry machinery rings), it is not surprising that people in charge of machinery rings do not have enough time to do their tasks. Hence, the status of machinery rings must change.

As mentioned above, the work in machinery rings should be professionalized, especially when a machinery ring gets enough members (more than 400) and when it reaches a sufficiently wide range of services (Dolenšek 2008). This is recognized as the main opportunity for machinery rings. The opportunities are also reflected in improved activities in the field of forestry, especially with technological development and improved harvesting system. With modern and more highly mechanized forest machines, the investment costs increase. An increased need for machinery cooperation is expected in the future as these modern logistic concepts require a significant capital investment, which often exceeds the capacity of private forest owners, based on modest income from

their small-scale forests. On the other hand, in machinery rings, the employment of forest contractors (one of the members) ensures forest tending, as small-scale private forest owners are insufficiently professionally, technically and financially skilled for the management of forests.

If the members of a machinery ring provide the same services, internal competition can occur, which represents a threat for machinery ring operation. Subsidies for investments into equipment and machinery purchase are given only to bigger owners. This has an adverse effect on the owners with small-size properties but could nonetheless provide the same services to the members in a machinery ring. Obviously, the subsidies system should be changed so as to enable the members of machinery rings to apply for such subsidies provided that they undertake to work with such machinery in a machinery ring for the next five years. Recently, there has been a trend in the Slovenian public forestry service to stimulate the association of private forest owners into societies. However, this has a negative effect on machinery rings and can also be seen as a threat.

To arrive to the final stage of A'WOT method, the priority vectors (w) and consistency ratios (CR) of group comparison matrices were calculated for factors in SWOT groups. They are presented in Tables 4–7.

Table 4 Priority vector and consistency ratio of group comparison matrix of strengths

Tablica 4. Vektor težine i omjer konzistencije za matricu usporedbe snage

Strengths – Snage	w
Integration of farmers and private forest owners – Povezanost poljoprivrednika i privatnih šumovlasnika	0.4844
Knowing the level of mechanization of members – Poznavanje razine mehanizacije kod članova	0.4060
Education of private forest owners – Obrazovanje privatnih šumovlasnika	0.1095

CR=0.0347

Table 5 Priority vector and consistency ratio of group comparison matrix of weaknesses

Tablica 5. Vektor težine i omjer konzistencije za matricu usporedbe slabosti

Weaknesses – Slabosti	w
Not enough means for operation – Nedovoljno sredstava za operacije	0.5821
Lack of time of the machinery ring president – Nedostatak vremena predsjednika udruženja za upotrebu mehanizacije	0.2750
Realization of personal interests – Postizanje osobnih interesa	0.1430

CR=0.0003

Table 6 Priority vector and consistency ratio of group comparison matrix of opportunities

Tablica 6. Vektor težine i omjer konzistencije za matricu usporedbe prilika

Opportunities – Prilike	w
Strengthening the operation of the machinery rings in the field of forestry – <i>Jačanje operacija udruženja u šumarstvu</i>	0.8000
Partial professionalization of work – <i>Djelomična profesionalizacija rada</i>	0.2000

CR=0.0000

Table 7 Priority vector and consistency ratio of group comparison matrix of threats

Tablica 7. Vektor težine i omjer konzistencije za matricu usporedbe prijetnji

Threats – Prijetnje	w
Subsidies for equipment investments – <i>Poticaji za nabavu opreme</i>	0.5168
Fostering the association of Slovenian public forestry service into other forms of cooperation <i>Poticanje udruživanja u druge oblike suradnje koje dolazi od javnoga šumarskoga servisa Slovenije</i>	0.2470
Competition among providers/members – <i>Konkurencija među dobavljačima/članovima</i>	0.2361

CR=0.0191

According to the results of SWOT factors, the factor with the highest priority is selected and it represents a group. The strengths were represented by the factor »Integration of farmers and private forest owners«, the weaknesses by »Not enough financial means for operation«, the opportunities by »Strengthening the operation of machinery rings in the field of forestry«, and threats by the factor »Subsidies for equipment investments«.

Furthermore the priority vectors (*w*) and consistency ratios (CR) of group comparison matrices for SWOT groups are presented in Table 8.

The analysis conducted according to A'WOT method showed that in order to establish the strate-

Table 8 Priority vector and consistency ratio of group comparison matrix of SWOT groups

Tablica 8. Vektor težine i omjer konzistencije za matricu usporedbe grupa SWOT

SWOT groups – SWOT grupe	w
Strengths – <i>Snage</i>	0.0895
Weaknesses – <i>Slabosti</i>	0.2836
Opportunities – <i>Prilike</i>	0.2428
Threats – <i>Prijetnje</i>	0.3840

CR=0.0292

gic objectives, machinery rings have to minimize weaknesses (*w* = 0.2836) to avoid threats (*w* = 0.3840). A defensive approach to strategic planning was, therefore, applied to form suitable strategies. Such defensive formation of strategies represents a combination of the following strategic objectives: acquisition of financial means for the operation of machinery rings not only from the government, but also from self-promotion of the operation of machinery rings. This would provide the services offered to non-members who would pay a certain price in exchange. The promotion itself depends on the time of the people in charge, and therefore points into the direction of professionalizing the operation of larger machinery rings. In this way, the collaboration among members would improve and there would be less mistrust of the operation and fewer personal interests. If these weaknesses are surmounted, the members will try to influence the tenders for subsidiaries and take care of the promotion of machinery ring integration. In this case the fostering of integration by the Slovenian public forestry service into other forms of cooperation would not represent a threat anymore. Additionally, together with the improved operation of machinery rings, the competition among the service providers would decrease.

5. Conclusion – Zaključak

According to the results of our study, as well as previous experiences with A'WOT (e.g. Pykalainen et al. 1999, Ananda and Herath 2003, Wolfslehner et al. 2005, Šegotić et al. 2007), we can assent that the combined use of the AHP method and SWOT analysis is a promising approach in supporting strategic decision making processes. The evaluation of strategies with A'WOT method forces the decision makers to analyze the situation more precisely than in the cases where only the standard SWOT analysis is used.

Machinery rings are nowadays an essential part of strategic (operational) management in Slovenian agriculture and forestry. However, there seem to remain many opportunities that are not fully exploited. In the future, it is necessary to expand the membership of machinery rings to new farmers and forest owners, to promote the services offered by members, to strengthen the operations in the field of forestry and to find new opportunities in the market, especially in the sense of cooperation between forest owners and forestry enterprises. All these facts enable members to operate efficiently, while using the newest technologies and to optimize the production costs.

The optimal use of the available machinery and the exchange of farmer-to-farmer services should become tasks and prospects of Slovenian machinery rings. This endeavor ensures a cost efficient use of machinery – machinery management. However, machinery rings can offer much more to their members. Machinery rings can provide economic assistance, i.e. assistance at peak working season and social assistance, i.e. social operations in emergencies. Thus, with the expansion of services to private individuals, as for example winter service suppliers, companies, municipalities and public institutions, the members can gain additional income and labor opportunities.

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Sažetak

Sadašnje stanje i perspektive suradnje privatnih šumovlasnika Slovenije u udruženjima za upotrebu šumske mehanizacije

U Republici Sloveniji prevladavaju privatne šume. Razvoj i gospodarenje privatnim šumama povezani su s promjenama društveno-ekonomske strukture privatnoga šumoposjeda, koje se očituju u smanjenju veličine privatnih posjeda, porastu broja šumovlasnika, niskom intenzitetu gospodarenja, neadekvatnoj opremi i nedovoljnoj upotrebi šumske mehanizacije.

Za racionalno gospodarenje privatnim šumama i zadovoljavajuću upotrebu mehanizacije potrebna je suradnja privatnih šumovlasnika, koja će smanjiti troškove i omogućiti upotrebu novih, suvremenijih načina šumskoga rada u privatnim šumama.

Stanje i perspektive suradnje u upotrebi šumske mehanizacije u Republici Sloveniji analizirani su anketiranjem privatnih šumovlasnika i analizom A'WOT (SWOT + AHP analiza). Za anketiranje su članovi udruženja za upotrebu šumske mehanizacije (dalje udruženja) podijeljeni u pet razreda prema veličini posjeda, a unutar tih razreda obavljen je sustavni izbor. Uzorak je obuhvatio 172 člana udruženja. Na anketu je odgovorilo 43,8 % ispitanika. Za identificiranje SWOT čimbenika intervjuirani su predsjednici udruženja koja rade u šumarstvu. Predsjednici su izrazili svoje mišljenje o snagama, slabostima, prilikama i prijetnjama njihova djelovanja na gospodarenje privatnim šumama.

Rezultati anketiranja pokazuju da su članovi udruženja samo djelomično zadovoljni s njegovim djelovanjem. Razlog su tomu nedovoljne aktivnosti i informiranje o mogućnostima upotrebe kapaciteta ostalih članova, premalo ponuđenih aktivnosti i suradnje među članovima te problemi s obračunavanjem njihovih usluga. 93,9 % privatnih šumovlasnika u udruženju smatra da su njihovi interesi u vezi s gospodarenjem privatnom šumom zadovoljeni (tablica 2). Za većinu članova udruženja su prikladan oblik suradnje u odnosu na njihove potrebe u gospodarenju šumom. Suradnja u udruženju ima budućnost pogotovo ako se imaju na umu društveno-ekonomske promjene iz čistih u mješovitih gospodarstva. Sve manje i manje privatnih šumovlasnika imat će dovoljno vremena, praktičnoga iskustva i znanja za gospodarenje šumom. Zbog toga će u budućnosti veći dio privatnih šumovlasnika tražiti informacije i unajmljivati usluge udruženja.

Rezultati analize A'WOT pokazuju da je glavna snaga udruženja povezivanje poljoprivrednika i privatnih šumovlasnika (tablica 4), a slabost nedovoljna sredstava za provođenje aktivnosti (tablica 5). Glavna je prilika jačanje aktivnosti udruženja u šumarstvu (tablica 6), a prijetnja su nedovoljni poticaji za nabavu opreme, koji su dostupni samo velikim šumovlasnicima (tablica 7). Obrambeni pristup strateškoga planiranja primijenjen u obliku prikladne strategije udruženja pokazuje da je potrebno smanjiti slabosti kako bi se izbjegle prijetnje.

Udruženja su danas neizostavni dio slovenske poljoprivrede i šumarstva, međutim njihove se mogućnosti nedovoljno koriste. U idućem je razdoblju potrebno proširiti članstvo na nove poljoprivrednike i šumovlasnike, promicati usluge članova, jačati suradnju u šumarstvu i pronaći nove tržišne mogućnosti, osobito u suradnji među poduzećima. To će omogućiti članovima da rade gospodarski efektivno primjenom najnovije tehnologije i optimiziranjem troškova proizvodnje. Slovenska udruženja danas nude samo usluge koje se odnose na troškovno efektivnu upotrebu strojeva, a mogli bi ponuditi članovima puno više: gospodarsku i socijalnu pomoć.

Ključne riječi: suradnja u upotrebi mehanizacije, udruženja šumske mehanizacije, privatne šume, anketiranje, metoda A'WOT, strateško planiranje

Authors' address – *Adresa autorâ:*

Špela Pezdevšek Malovrh, PhD.
e-mail: spela.pezdevsek.malovrh@bf.uni-lj.si

Prof. Lidija Zadnik Stirn, PhD.
e-mail: lidja.zadnik@bf.uni-lj.si, PhD.

Prof. Janez Krč, PhD.
e-mail: janez.krc@bf.uni-lj.si

Biotechnical Faculty
Department of forestry and renewable forest resources

Večna pot 83
1000 Ljubljana

SLOVENIA

Petra Grošelj, Msc.
e-mail: petra.groselj@bf.uni-lj.si

Biotechnical Faculty
Department of wood science

Cesta VIII/34
1000 Ljubljana

SLOVENIA